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Tank: The Progress of a Monstrous War Machine

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seemed to be three competing methods: gaseous diffusion, thermal separation, and electromagnetic separation. Each method had its advocates and its virtues. None was proven. While the scientific community dithered over the best technical method, Groves charged in and, with real managerial brass, initiated simultaneous and parallel development of all three separation methods, making the largest bet on the gaseous-diffusion method at Oak Ridge.

As the engineering worked out, using the partially enriched product from the thermal and the electromagnetic separation processes as feedstock for gaseous diffusion gave accelerated results, and the enriched uranium was ready on time for the bomb.

Initially, there were two quite different design approaches to building the bomb. The most obvious was the gun assembly technique, in which two subcritical masses of enriched uranium were explosively driven and held together until nuclear fission began and was sustained. This design became the “Little Boy” bomb that was dropped on Hiroshima in the world’s first atomic attack.

However, theory held that the use of plutonium would produce a far more efficient means of nuclear detonation. Plutonium is an artificial element, bred in a uranium-fueled reactor that is formed into a hollow sphere and implodively crushed with high explosives until a nuclear detonation occurs. This proved to be a demanding technical problem requiring massive industrial sites for plutonium production at Hanford, Washington, and nearly all the talent at Los Alamos to calculate and form the sphere and the surrounding high explosives.

Again, Groves made the call, and both avenues were followed, at great cost, until the TRINITY test at Alamogordo, New Mexico, proved the plutonium implosion, which was used in the “Fat Man” bomb dropped on Nagasaki.

Since Hiroshima and Nagasaki, historians have devoted nearly as much energy to debating who made the decision to use the bomb as was released in the atomic explosions. Norris goes into this in some detail, looking specifically at Groves’s role in decision making. He concludes that, as is commonly the case with large weapons development projects in wartime, the momentum of the project drove the outcome. The bomb was ready, an invasion of Japan looked to be murderously costly, momentum carried the day, and the bomb was dropped on Japan.

Norris’s book is a fine complement to Richard Rhodes’s *The Making of the Atomic Bomb* (1986), in which Rhodes covers the physics of the bomb. Both books chronicle events that changed the world.

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Wright, Patrick. *Tank: The Progress of a Monstrous War Machine*. New York: Viking Penguin, 2002. 499pp. \$29.95

The tank constitutes perhaps the most readily identifiable symbol of land warfare. From its initial appearance during World War I to the final stage of the Gulf War, its considerable impact on the outcome of some of last century’s most significant wars is not in doubt. Whether battles were fought on the plains of Eastern Europe or in the deserts

of the Middle East, the opponent that made better use of the tank generally emerged victorious. In the early twenty-first century, the tank remains the dominant instrument of land warfare. Indeed, the fact that the world's most powerful armies—including those of the United States, Germany, Israel, Russia, and China—continue to organize their ground forces around the tank strongly suggests that its preeminent position is unlikely to be challenged any time soon.

Not surprisingly, therefore, the tank has been the focus of a substantial amount of literature. Most studies of the tank fit into at least one of three basic categories: describing the tank's actual part in a particular war, analyzing its operational role in a particular army, or assessing the general theory behind armored warfare. Studies that address the tank's past across time and space—indeed, that go beyond the narrow confines of the battlefield itself—are rather rare. This paucity of studies is apparently what spurred Patrick Wright, a professor of modern cultural studies in Great Britain, to produce this accessible, if flawed, history of the tank in the twentieth century.

Wright adopts a chronological approach to his subject. He begins with the first tentative use of the tank by the British on the western front during the First World War. He reasonably implies that the tank had a certain shock value on the battlefield but that it did not contribute in any meaningful way to Germany's eventual defeat. The tank really came into its own during the interwar period. One of the best chapters in this book traces the evolving military philosophies of the major European armies during this era, especially the

German and Russian preference for maneuver warfare, with the tank as a central component of the "combined arms" team. World War II, he agrees, demonstrated just how dominant the tank could be on the mechanized battlefield, most astonishingly in the hands of the Germans on both the Western and Eastern Fronts and, later, in the hands of the Soviets as they drove into Central Europe.

The tank continued to be a "winning weapon" in the postwar world too, as Wright acknowledges in his discussion of the Israeli experience with armored warfare in the Arab-Israeli wars from the 1956 Sinai campaign through the 1967 Six-Day War, to the 1973 Yom Kippur War. Among the most stimulating material in the book is Wright's description of Major General Israel Tal's philosophy of armored warfare, which resulted in the design and construction of the innovative Merkava tank. Tal, of course, is the Jewish state's most highly regarded armored warfare specialist. Wright also traces the tank's part in the Gulf War and muses about its potential utility in an age of "digital" combat. All in all, Wright manages to convey a sense of the tank's contribution to war in the twentieth century.

Yet this book still suffers from a curiously unbalanced presentation. While it is surely legitimate for the author to write a history of the tank that goes beyond its successes and failures on the battlefield—one that delves into the tank's broader cultural relevance—Wright appears to have forgotten that its primary influence has always been on the battlefield itself. Thus, on the one hand, undeniably major tank battles, like those that occurred at Kursk during the Second World War and in

the Sinai during the Yom Kippur War, are examined in a cursory fashion. On the other hand, undeniably minor episodes in the tank's past, like the defacement of a memorial to Soviet troops in postcommunist Czechoslovakia, are the recipients of lavish coverage (relatively speaking). Wright may favor cultural over military affairs, but this sort of bias should not serve as a license to present a skewed picture of history.

Furthermore, the author writes from a left-wing perspective, which he is honest enough to admit frankly. Such a perspective is not inherently objectionable; however, when it leads to dubious judgments about what to incorporate as part of the tank's history, it becomes a problem. Thus he includes a long digression that probes in excruciating detail J. F. C. Fuller's bizarre *Weltanschauung* and obnoxious racism. It would have been sufficient for Wright simply to mention in passing that, whatever Fuller's insights into armored warfare, he was also an unsavory character with extreme right-wing views. Likewise, Wright spends the better part of a chapter examining a storage contraption for

homeless people that bears only a superficial resemblance to a tank. This specific detour seems intended to chide the United States for its treatment of the less fortunate rather than to illuminate the tank's cultural relevance. A historical treatise, to put it bluntly, should not be used as a vehicle for airing political views.

These criticisms should not be taken to mean that Wright's book is ultimately unrewarding. To the contrary, it can be consulted with profit by anyone who has an interest in the tank. The book is, after all, well written, well organized, and filled with fascinating tidbits of information. However, it must be approached with a degree of caution. It is not the judicious and dispassionate account that one would expect from a professional observer but instead a polemic against a weapon and the ends to which man has put it. The book should be read with that notion firmly in mind.

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